First report of early blight caused by Alternaria linariae on potato in Algeria

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Résumé en anglais	Potato (Solanum tuberosum L.) occupies a leading place in Algerian agriculture where it is grown over an area of approximatively 160,000 ha and can be planted and harvested in virtually any month of the year. However, this production remains threatened by early blight disease caused by Alternaria species including A. solani, A. grandis and A. protenta (Bessadat et al., 2017; Ayad et al., 2017). High incidences of early blight (up to 80 %) have previously been observed in north-western parts of Algeria on potato as well as tomato (Bessadat et al., 2017). Potato disease surveys were carried out between 2012 and 2015 with sampling performed in twelve potato growing regions of Algeria. One hundred and sixty-four leaf samples exhibiting typical early blight symptoms (dark, elongated or circular lesions with concentric rings surrounded by a yellow halo) were collected. Small pieces (3-4 mm2) were cut off from the lesion edges, surface disinfested and plated on potato dextrose agar medium at 22°C. From the isolates obtained, eighty-two exhibited morphological characteristics associated with species of Alternaria belonging to the section Porri. Twenty-two pure cultures were induced to sporulate by plating on V8 medium and incubating for two weeks under alternating 12 h darkness and 12 h near-UV light. Although most of the isolates had typical morphological and sporulation characteristics of A. solani and A. grandis, five isolates, originating from north Algeria, produced conidia whose body and beak length (up to 108 µm and 225 µm, respectively) were in the range of those described for A. linariae (Gannibal et al., 2014). For confirmation of the identity of these isolates at the species level, partial region of the calmodulin (cal) gene was amplified using published primer set (Gannibal et al., 2014) and sequenced. Maximum-likelihood cluster analysis of the resulting nucleotide sequences (GenBank accession Nos. MH243795, MH243769, MH243793, MH243789, MH243794) and additional reference sequences of species within the section Porri confirmed that the five isolates (DA01, DA02, DA03 from the wilaya Tipaza and DA06, DA07 from the wilaya Alger) could be assigned to A. linariae with 100% sequence similarity to a reference strain (CBS 109161; GenBank accession No. JQ646254) (Woudenberg et al., 2014). To confirm pathogenicity of the five A. linariae isolates, 3-week-old leaves of susceptible varieties of tomato (Marmande and St Pierre) and potato (Spunta and Sarpomira), cultivated in pot under greenhouse at 28°C with 16h/day light, were inoculated by depositing 20 µl drops of a 104 conidia/ml suspension. Irrespective of the tested plant species and variety, all inoculated leaves showed extending lesions that may reach up 60% of the leaf area at 21 days post-inoculation. No symptom was observed on control plants treated with distilled water. Together with A. solani, A. linariae is considered as the main causal agent of tomato early blight (Gannibal et al., 2014) but it has never been described on potato. To our knowledge, this is the first report for the occurrence of A. linariae on potato. The fact that potato and tomato fields often co-exist in close proximity in northwestern Algeria with farmers even using tomato in rotation with potato may favor the development of A. linariae on the latter plant species
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